

We claim:

1. An implant for relieving pain associated with the spinal column comprising:

5 a device that is adapted to be positionable between a first spinous process and a second spinous process;

said device including a first means for not limiting flexion of the spinal column; and

said device including a second means for limiting extension of the spinal column.

2. The implant of claim 1 wherein:

said first means does not prevent the spreading apart of the first spinous process from the second spinous process; and

15 said second means does stop the motion of the first spinous process and the second spinous process toward each other.

3. The implant of claim 1 wherein:

said device includes a spinous process containment member; and

20 said first means includes an open end of said spinous process containment member; and

said second means includes a saddle of said spinous process containment member.

25 4. The implant of claim 1 wherein:

said device includes a means for distracting the first spinous process from the second spinous process.

5. The implant of claim 4 wherein:

said distraction means can create a distraction of at least about 5 mm upon insertion between the first and the second spinous process.

6. The implant of claim 4 wherein:

said distraction means can create a distraction of about 5 mm to about 15 mm upon insertion.

7. A spinal column implant comprising:

a device positionable between a first spinous process and a second spinous process;

said device including a spinal column extension stop; and wherein said device does not inhibit spinal column flexion.

8. A spinal column implant comprising:

a device that is adapted to be positionable between a first spinous process and a second spinous process;

said device includes a spinal column extension stop; and said device includes a spinal column flexion non-inhibitor.

9. The implant of claim 8 wherein:

said device is comprised of one of stainless steel, titanium, ceramic, a composite material, an elastic material, a polymer, and a plastic material..

10. An implant for relieving pain associated with the spinal column comprising:

a device that is adapted to be positionable between a first spinous process and a second spinous process; and

said device including means for distracting the first and the second spinous processes upon implant in order to relieve pain through distraction.

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11. The implant of claim 10 wherein:

said distracting means causes distraction of at least about 5 mm between the first and the second spinous process.

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12. The implant of claim 10 wherein:

said distracting means causes distraction of about 5 mm to about 15 mm.

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13. An implant for relieving pain associated with the spinal column comprising:

a device that is adapted to be positionable between a first spinous process and a second spinous process; and

said device including a distracting wedge that can distract the first and the second spinous processes.

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14. The implant of claim 13 wherein:

said distraction wedge can distract the first and the second spinous processes by about 5 mm.

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15. The implant of claim 8 wherein:

said spinal column extension stop is adjustable to fit the size of various spinous processes.

16. The implant of claim 8 wherein:  
said spinal column extension stop is adapted to be associated  
with the first spinous process

another spinal column extension stop adapted to be associated  
with the second spinous process, said spinal column extension stop  
spaced from the another spinal column extension stop; and

a length adjustor located between the spinal column extension  
stops in order to selectively adjust the distance between the extension  
stops.

17. The implant of claim 8 wherein:  
said device is positionable adjacent to the posterior aspects of the  
first and the second spinous processes.

18. The implant of claim 8 wherein:  
said device is positionable adjacent to the axis of rotation of the  
spinal column.

19. The implant of claim 8 wherein:  
said device is positionable adjacent to the lamina of the spinal  
column.

20. The implant of claim 8 wherein:  
said device is flexible in order to avoid bone resorption.

21. The implant of claim 8 wherein:  
said device is flexible.

22. The implant of claim 8 wherein:

said device includes a first member and a second member and a fastener that can secure the first member to the second member; and with said first member fastened to said second member with said fastener, said fastened together first and second members define said extension stop and another extension stop.

23. The implant of claim 22 wherein:

said extension stop is spaced from said another extension stop; and with the device implanted in a spinal column the extension stop is associated with the first spinous process and the another extension stop is associated with the second spinous process.

24. The implant of claim 22 wherein:

said second member is selected from a plurality of differently sized second members that can accommodate variously sized spinous processes.

25. The implant of claim 22 wherein:

said fastener is part of either the first member or the second member.

26. An implant for relieving pain associated with the spinal column comprising:

a device that is adapted to be positionable between a first spinous process and a second spinous process; and

the device is adapted to increase the volume of a spinal canal and/or a neural foramen in said spinal column in association with the positioning of the device between the spinous processes.

27. The implant of claim 26 wherein:  
the device inhibits any decrease in the volume of the spinal cord  
and/or neural foramen as the spinal column is placed in extension.

5 28. The implant of claim 8 wherein:  
said device includes a shock absorber.

29. The implant of claim 13 wherein:  
said device includes a shock absorber.

10 30. The implant of claim 26 wherein:  
said device includes a shock absorber.

15 31. The implant of claim 8 wherein:  
said device has anatomically rounded features.

32. The implant of claim 13 wherein:  
said device has anatomically rounded features.

20 33. The implant of claim 26 wherein:  
said device has anatomically rounded features.

34. The implant of claim 8 wherein:  
said device is perforated in order to increase flexibility.

25 35. The implant of claim 13 wherein:  
said device is perforated in order to increase flexibility.

36. The implant of claim 26 wherein:  
said device is perforated in order to increase flexibility.

5 37. A method of relieving pain due to the development of spinal  
stenosis and the like in the spinal column including the steps of:  
accessing adjacent first and second spinous processes of the  
spinal column;  
10 distracting the first and second spinous processes a sufficient  
amount in order to increase the volume of the spinal canal and/or the  
neural foramen in the spinal column in order to relieve pain due to the  
development of spinal stenosis and the like; and  
implanting a device in order to maintain the amount of distraction  
required to relieve the pain due to spinal stenosis and the like.

15 38. The method of claim 37 including the step of:  
distracting apart the first and the second spinous process at least  
about 5 mm.

20 39. The method of claim 37 including the step of:  
distracting apart the first and the second spinous process from  
about 5 mm to about 15 mm.

25 40. The method of claim 37 wherein:  
said distracting step and said implanting step occur  
simultaneously as the step of implanting a device causes distraction.

41. The method of claim 37 wherein:  
said device includes a distraction wedge; and

said distracting step and said implanting step occur simultaneously as the step of implanting a device causes distraction due to the distraction wedge distracting apart the first and the second spinous process.

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42. A method of relieving pain due to the development of spinal stenosis and the like in the spinal column including the steps of:

accessing adjacent first and second spinous processes of the spinal column;

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implanting a device in order to distract apart the first and second spinous processes a sufficient amount in order to increase the volume of the spinal canal and/or neural foramen in the spinal column to relieve pain due to the development of spinal stenosis and the like; and

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using the device in order to maintain the amount of distraction required to relieve the pain due to spinal stenosis and the like.

43. The method of claim 37 including the step of:  
maintaining intact the interspinous ligament.

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44. The method of claim 42 including the step of:  
maintaining intact the interspinous ligament.

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45. The device of claim 8 wherein:  
said implant provides for dynamic distraction between the first and the second spinous processes by including a fluid filled vessel.

46. The device of claim 22 wherein:  
said fastener is part of the first member and part of the second member.



47. The device of claim 46 wherein:

said fastener is self-engaging such that by urging the first member and the second member together in order to assembly the device a portion of the fastener in the first member engages a second portion of the fastener in the second member.

48. A method of relieving pain due to the development of spinal stenosis and the like in the spinal column including the steps of:

accessing adjacent first and second spinous processes of the spinal column with first and second incisions;

distracting the first and second spinous processes a sufficient amount in order to increase the volume of the spinal canal and/or neural foramen in the spinal column in order to relieve pain due to the development of spinal stenosis and the like; and

implanting a first portion of a device through said first incision and a second portion of said device through said second incision, until said devices can be mated;

said device including a fastener, with the fastener used in a step of securing the first portion to the second portion in the mated configuration in order to maintain the amount of distraction required to relieve the pain due to spinal stenosis and the like.

49. The method of claim 48 including:

using a tool having a first arm on to which is mounted the first portion of the device and a second arm on to which is mounted the second portion of the device in order to urge the first portion and the second portion through the respective first and second incisions and in to mating position.

50. A method of relieving pain due to the development of spinal stenosis and the like in the spinal column including the steps of:

accessing adjacent first and second spinous processes of the spinal column with first and second incisions;

5 implanting a first portion of a device through said first incision and a second portion of said device through said second incision, until said devices can be mated, and simultaneously distracting the first and second spinous processes a sufficient amount in order to increase the volume of the spinal canal and/or neural foramen in the spinal column in order to relieve pain; and

10 said device including a fastener, with the fastener used in a step of securing the first portion to the second portion in the mated configuration in order to maintain the amount of distraction required to relieve the pain.

15 51. An implant for relieving pain associated with the spinal column comprising:

a device that is adapted to be positionable between a first spinous process and a second spinous process;

20 said device including a first forked end and a second forked end;

25 said device including an interbody which is operably connected to the first and second forked ends so that rotation of the interbody causes the first and second forked ends to move apart from each other in order to distract the first and the second spinous processes with respect to each other.

52. A method using an implant for relieving pain associated with the spinal column comprising the steps of:

accessing the space between a first spinous process and a second spinous process of the spinal column;

positioning an implant between the first spinous process and the second spinous process;

5 wherein said implant includes a first means for not limiting flexion of the spinal column; and

said implant including a second means for limiting extension of the spinal column.

10 53. A method of relieving pain using a spinal column implant comprising the steps of

accessing the space between a first spinous process and a second process;

15 positioning the implant between the first spinous process and the second spinous process;

wherein said device including a spinal column extension stop; and

said device includes a spinal column flexion non-inhibitor.

20 54. The method of claim 48 wherein:

the distracting step includes wedging the first and second spinous processes apart.

25 55. A method for relieving pain associated with the spinal column including the steps of:

accessing first and second spinous processes;

distracting the first and second spinous processes in order to increase the volume of a spinal cord and/or neural foramen in the spinal column;

implanting a device between the first and second spinous processes to do one of (1) further distracting and maintaining the distraction of the first and second spinous processes, and (2) maintaining the distraction of the first and second spinous processes.

56. The method of claim 55 wherein the distracting step includes:

multiple distracting steps with a time period between distracting steps in order to allow the tissues associated with the spine to creep.

57. A method for relieving pain associated with the spinal column including the steps of:

accessing first and second spinous processes;

implanting a device in order to distract the first and second spinous processes to increase the volume of a spinal canal and/or neural foramen in the spinal column; and

maintaining the distraction with the device.

58. The method of claim 57 wherein the implanting step includes:

multiple distracting steps with a time period between distracting steps in order to allow the tissues associated with the spine to creep.

59. A method for relieving pain associated with the spinal column comprising the steps of:

implanting a device between a first spinous process and a second spinous process, said device including a first forked end and a second forked end, and said device including an interbody piece which is operably connected to the first and second forked ends so that rotation

of the interbody piece causes the first and second forked ends to move apart in order to distract the first and the second spinous processes with respect to each other; and

distracting the spinous processes by rotating the interbody piece.

60. The method of claim 42 for relieving pain caused by at least one of spinal stenosis and facet arthropathy.

61. An implant for flattening the spine in order to increase the volume of at least one of the spinal canal and the neural foramen comprising:

a central body with first and second saddles which are adapted to receive adjacent spinous processes;

a first arm projecting from the first saddle, and a second arm projection from the second saddle; and

wherein said central body and the first and second arms form a Z-shaped structure.

62. The implant of claim 61 wherein:

the first and second arms are forward migration inhibitors which prevent the implant from migrating toward the spinal canal.

63. The implant of claim 61 wherein:

the first and second arms are contoured to the lamina of the spine.

64. The implant of claim 61 wherein:

said implant is designed to conform to the bone structure between at least one of the L4-L5 and or the L5-S1 spinous processes.

65. An implant for relieving pain associated with the spinal column comprising:

a device which is adapted to be positioned between a first spinous process and a second spinous process;

5 said device being Z-shaped with a first member extending in a first direction and a second arm extending in another direction;

10 and wherein said first arm is adapted to be inserted between and guided through the space between the first and the second spinous processes so that the implant can be positioned with one member on one side of the spinous processes and the second member on the other side of the spinous processes.

66. The implant of claim 65 wherein:

15 said first and second members are flexible.

67. A method of relieving pain due to the development of spinal stenosis and the like in the spinal column including the steps of:

20 accessing adjacent first and second spinous processes of the spinal column from one side;

25 position a Z-shaped implant between the spinous processes in order to either distract and maintain the distraction between the spinous processes and/or to maintain a distraction between the two spinous processes;

wherein said Z-shaped implant has first and second members extending from a central body, and the positioning step includes guiding the first arm between a space between the first and second spinous processes until the central body is located between the spinous processes with the first arm on one side of the spinous processes and the second arm on the other side of the spinous processes.

68. The method of claim 67 including the steps of:  
selecting arms that are contoured to the spine; and  
positioning the arms adjacent to the portion of the spine for  
which they are contoured.

69. The method of claim 67 including the steps of:  
selecting arms that are contoured to be positioned adjacent to  
one of L4-L5 and L5-S1 vertebrae; and  
positioning the implant between the vertebrae for which the  
implant was contoured.

70. The implant of claim 1 including:  
a third means for preventing migration of the implant toward the  
lamina of the spinal column.

71. The implant of claim 8 including:  
said device includes a lamina migration inhibitor.

72. An implant for relieving pain associated with the spinal  
column comprising:  
a central body  
a first arm extending from the central body;  
a second arm received in a first position in the central body and  
movable between said first position and a second position extending  
from the central body in order so that the first and the second arms can  
retain the implant relative to first and second spinous processes of the  
spinal column.

73. The implant of claim 72 wherein:

said first and second arms are located on opposite sides of the spinous processes when implanted and said arms extend in opposite directions with the second arm extended from the central body.

74. The implant of claim 72 including:

a third arm received in a first position in the central body and movable between said first position and a second position extending from the central body.

75. The implant of claim 72 wherein:

said first arm is a peripheral flange extending from and about the central body.

76. An implant for flattening the spine in order to increase the volume of at least one of the spinal canal and the neural foramen comprising:

a central body with first and second saddles which are adapted to receive adjacent spinous processes;

first and second arms projecting from the first saddle and third and fourth arms projecting from the second saddle;

said first and fourth arms are longer than the central body with the first arm being longer than the fourth arm; and

the second and third arms are about the length of the central body and/or shorter than the central body with the second arm being shorter than the third arm.

77. The implant of claim 76 wherein:



said third arm is below said first arm and said fourth arm is below said second arm.

78. The implant of claim 76 wherein:

5 said third arm is substantially shorter than the first arm so that the implant can be directed between the space between adjacent spinous processes with the first arm first urged through the space and the spinous processes distracted so that the third arm can be urged through the space with the central body positioned between the spinous processes.

79. The implant of claim 76 wherein:

10 said first arm is sloped in a direction away from the central body in order to accommodate the shape of a vertebra.

80. The implant of claim 76 wherein:

15 said first, third, and fourth arms are sloped in a direction away from the central body in order to accommodate the shape a vertebra.

81. The implant of claim 76 wherein:

20 said central body includes a bore therein.

82. The implant of claim 76 wherein:

25 said central body includes a bore therein so that the implant has a modulus of elasticity that is compatible with that of bone.

83. The implant of claim 76 wherein:  
at least one of said saddles is sloped in order to accommodate a  
vertebra.

5 84. The implant of claim 76 wherein:  
at least one of said saddles is sloped about approximately 30° so  
as to accommodate a vertebra.

10 85. The implant of claim 76 wherein:  
at least one of said arms is sloped about approximately 30° so as  
to accommodate a vertebra.

15 86. The implant of claim 76 wherein:  
said first arm has a sloped portion which is sloped in a direction  
away from the central body; and  
said first arm has a recess located at a distal end of said sloped  
portion followed by a convex portion in order to accommodate the  
shape of a vertebra.

20 87. The implant of claim 76 wherein:  
said implant has a modulus of elasticity which is compatible with  
bone.

25 88. The implant of claim 76 wherein:  
said implant has as modulus of elasticity which is approximately  
about twice that of bone.

89. An implant for flattening the spine in order to increase the volume of at least one of the spinal canal and the neural foramen comprising:

a central body with first and second saddles which are adapted to receive adjacent spinous processes;

first and second arms projecting from the first saddle and third and fourth arms projecting from the second saddle;

said first and fourth arms are longer than the second and third arms; and

said third arm is located below said first arm and said fourth arm is located below said second arm, with said fourth arm located diametrically opposite said first arm in order to facilitate the implantation of the implant between adjacent spinous processes.

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